

**CLAIMS**

1. A wireless transmitter, comprising:  
an encoder for encoding a set of information bits to provide a set of code symbols;  
a demultiplexer for providing said set of code symbols in first and second code symbol subsets having different code symbol rates to first and second modulators, said first and second modulators respectively modulating said first and second code symbol subsets according to first and second code symbol rate formats, respectively, wherein said different code symbol rates have a ratio equal a number other than one, to provide modulated first code symbol subset and second code symbol subset;  
a transmission subsystem for said modulated first code symbol subset on a first carrier frequency and said modulated second code symbol subset on a second carrier frequency.
2. The wireless transmitter of claim 1 wherein said first and second modulators repeat code symbols within said first and second code symbol subsets, respectively, according to a said respective code symbol rate.
3. The wireless transmitter of claim 2 wherein said transmission subsystem scales a respective energy of said first and second modulated code symbol subsets according to a respective amount of code symbol repetition.
4. The wireless transmitter of claim 1 wherein said first modulator includes a first interleaver having a first interleaver format dependent on a first code symbol rate, and said second modulator includes a second interleaver having a second interleaver format dependent on a second code symbol rate.
5. The wireless transmitter of claim 1 wherein said first modulator includes a first PN scrambler for scrambling said first code symbol subset according to a first code symbol rate, and said second modulator includes a second PN scrambler for scrambling said second code symbol subset according to a second code symbol rate.

6. The wireless transmitter of claim 1 wherein said transmission subsystem includes a switch for selectively switching said first and second modulated code symbol subsets respectively onto a third carrier frequency.

7. A circuit for modulating an information signal, said circuit comprising:

a control processor;

an encoder for error-correction encoding of said information signal according to a format determined by said control processor to produce encoded symbols; and

a variable ratio demultiplexer for providing said encoded symbols to a plurality of modulators at different rates, wherein a ratio of said different rates equals a number other than one, wherein said ratio is selected in response to a control signal from said control processor.

8. The circuit of claim 7 wherein at least two of said plurality of modulators modulate said encoded symbols according to a different modulation format determined by said control processor in response to a symbol rate of said encoded symbols.

9. The circuit of claim 8 wherein each of said modulators further comprises a symbol repeater for repeating said encoded symbols according to said symbol rate.

10. The circuit of claim 9 wherein each of said modulators further comprises an interleaver for interleaving said encoded symbols according to an interleaver format determined by said control processor.

11. The circuit of claim 10 wherein each of said modulators further comprises a PN scrambler for changing the sign of said encoded symbols according to a PN sequence determined by said control processor in response to said symbol rate.

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12. A method for modulating an information signal, said method comprising the steps of:

error-correction encoding said information signal to produce encoded symbols;

providing said encoded symbols to a plurality of modulators at different rates, wherein a ratio of said different rates equals a number other than one; and

modulating said encoded symbols in each of said plurality of modulators according to a different modulation format in response to a symbol rate of said encoded symbols.

13. The method of claim 12 wherein said step of modulating further comprises the step of repeating said encoded symbols according to said symbol rate.

14. The method of claim 13 wherein said step of modulating further comprises the step of interleaving said encoded symbols according to a different interleaver format.

15. The method of claim 14 wherein said step of modulating further comprises changing the sign of said encoded symbols according to a PN sequence and in response to said symbol rate.

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